



Freeway Performance Initiative: Regional System Efficiency & Integration in the Works

THE GOAL:

To maximize the efficiency and improve the management, reliability and safety of the existing freeway, highway and arterial infrastructure, while limiting traditional expansion of the freeway system to only the most essential locations.

THE INVESTMENT HISTORY:

As one of the highest benefit-cost performing projects in the Transportation 2035 Plan (T-2035), \$1.6 billion was included for the Freeway Performance Initiative (FPI) to complete and maintain the Bay Area's Traffic Operations System, of which ramp metering was the largest component. A small portion of the FPI was also identified for signal timing improvements throughout the region. Additionally included, though separate from the \$1.6 billion, was \$220 million for incident management activities, including the Call Box and Freeway Service Patrol (FSP) Programs. No freeway widening was included (or funded) as part of the FPI. Of the funds included in T-2035, \$222 million and \$38 million has been allocated, respectively, to date.



THE ACCOMPLISHMENTS:

MAJOR progress in terms of quickly delivering low-cost projects that improve mobility and efficiency through proven technology, and increase motorist aid and safety for the Bay Area.

With the \$260 million T-2035 allocation, the following has been achieved:

Increased Ramp Metering: Expanded the number of ramps metered from 330 locations (28% of the system) in 2009 to 500 locations (44% of the system) by 2012. This has led to reduced travel times and improved reliability on major freeway corridors with almost no impact on local street operations. With traditional freeway expansion costing 15-50 times more to achieve similar congestion relief benefits, this quickly implementable strategy also yields significant reductions in CO, PM10 and PM2.5 emissions.

Effects of Ramp Metering Deployments Since 2007

		Maximum Travel Time Reduction	Peak Period Duration Reduction	% Delay Reduction
SM-101	SB; Hillsdale to University	-19 min.	-1 hr	57%
ALA-580	EB; Foothill to Greenville	-11 min.	-2 hr	33%
SM-280	NB; Sneath to Serramonte	-3 min.	-1 hr	28%
SCL-85	SB; Almaden to Cottle	-4 min.	-1 hr	52%
SCL-87	NB; Rte 85 to Skyport	-4 min.	-2 hr	30%
SCL-87	SB; Charcot to Santa Teresa	-9 min.	-1 hr	41%
ALA-580	WB; I-205 to Foothill	-7 min.	-1hr	24%
SCL-101	SB; Embarcadero to De La Cruz	-1 min.	N/A	5%
SCL-880	SB; SR 237 to Stevens Creek	-11 min.	-1 hr	38%



Retiming local signal systems that: 1) establish communication between local and state-owned signals, 2) coordinate signals across multiple jurisdictions, 3) coordinate signals included as part of other regional efforts (i.e. Safe Routes to Schools/Transit, Complete Streets, Smart Corridors, Incident Management), and 4) support priority for transit vehicles.

Program for Arterial System Synchronization (PASS)	
	(Annual Average)
# of signals retimed	500/year
# of transit lines on the corridors served	45
# of pedestrians accounted for during peak hour timing	10,000
# of bicyclists accounted for during peak hour timing	2,000
Benefit/Cost Ratio (includes travel time and fuel consumption savings and emissions reductions)	32:1
Emissions Reductions	ROG, NOx, PM10, CO

Improved Incident Management through the implementation of regional safety/motorist aid programs such as the FSP and Call Boxes in order to quickly identify and respond to planned and unplanned freeway incidents to minimize negative impacts on congestion, public safety, and air quality.

Freeway Service Patrol & Call Box	
	(Annual Average)
# of FSP trucks	78
# of FSP fwy miles covered	552
# of incidents with FSP response	130,000/year
FSP Benefit/Cost Ratio	4:1
FSP Emissions Reductions	ROG, NOx, CO
# of Call Boxes	2,200
# of Calls Received	22,000/year

THE NEEDED NEXT STEPS:

Although significant progress has been made, allocations from T-2035 Cycles 1 and 2 only funded part of the need, and thus much more needs to be done to complete the infrastructure and improve the integration and management of the region’s freeway and arterial systems. This includes looking at the funding needed to enable the existing programs and projects to respond to the growing needs of the region in the future, as in the area of emergency preparedness.

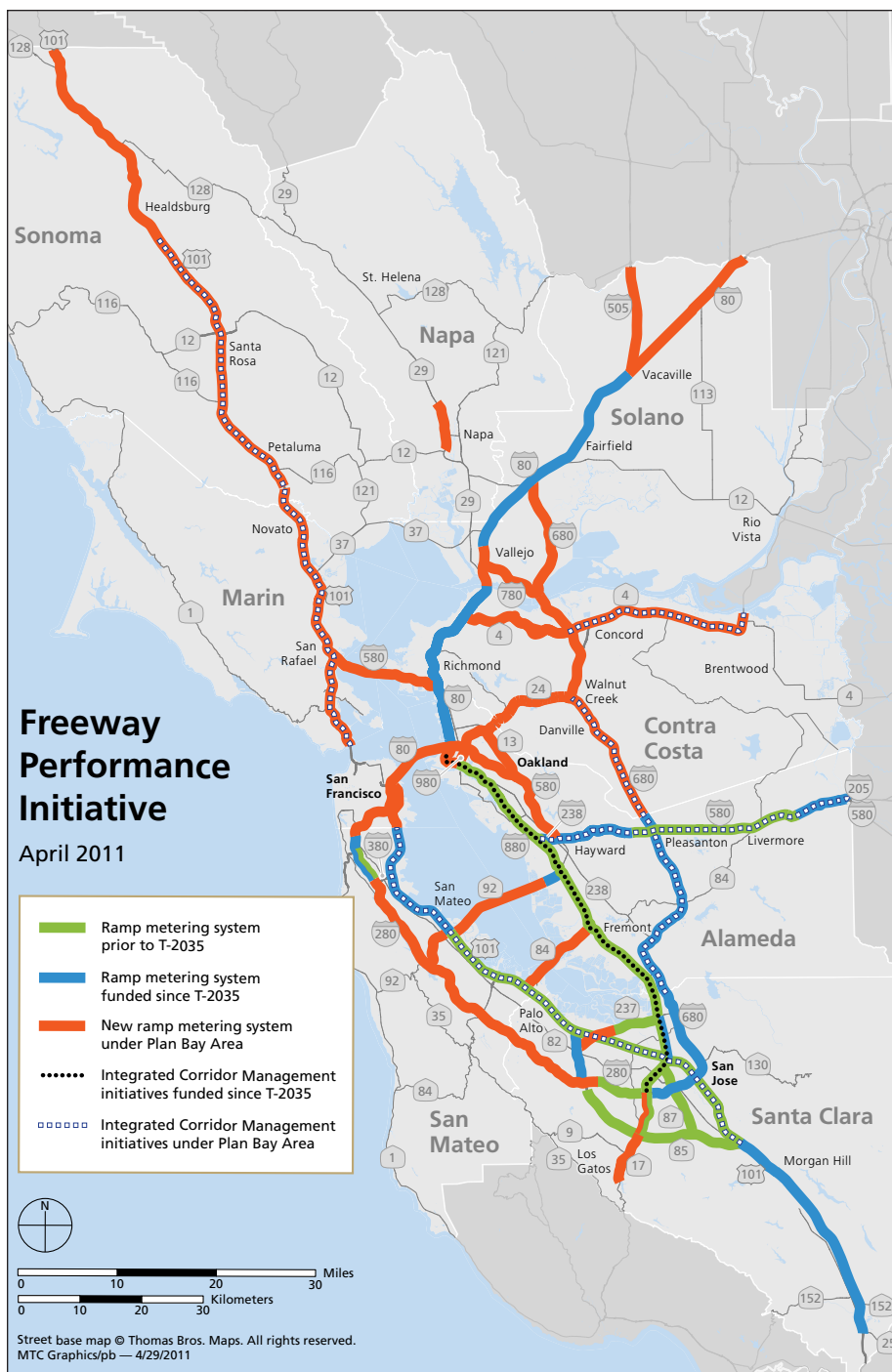
Additionally, the FPI benefits shown above can only be achieved if the system equipment is functioning properly. A substantial investment is therefore needed to operate, maintain, and repair/replace both existing and future Intelligent Transportation System (ITS) equipment, such as ramp meters, street signals, changeable message signs, and video cameras. Many agencies express frustration over insufficient funding for the maintenance of this important equipment, which leaves the infrastructure to deteriorate and fails to supply the management capabilities needed to provide the full extent of the system benefits to the traveling public.



THE FUTURE NEEDS UNDER PLAN BAY AREA:

Complete the unfunded portion of the T-2035 FPI, and expand the FPI scope to include essential elements needed for the successful implementation of other regional and local transportation programs and projects.

FPI Elements	28-Year Cost (Millions)	Description & Benefits
Ramp Metering	\$100M	Completes the ramp metering system in the Bay Area. 300 additional locations are proposed (see map on back page).
Freeway ITS Infrastructure	\$870M	Full deployment of the freeway ITS infrastructure, including traffic cameras, changeable message signs, and speed sensors to improve the efficiency of the freeway system and to manage non-recurrent congestion by minimizing the impacts of incidents on travel time reliability.
Arterial Management/ PASS	\$1,880M	Provides traffic signal coordination for 100% of the regionally significant signals (approx. 7,800 signals), builds out the arterial ITS infrastructure, and adds important elements like incident/emergency flush plans and Transit Vehicle Priority timing plans for all coordinated signals in the region.
Incident Management	\$400M	Sustains the existing level of investment in the FSP and Call Box Programs, and enhances transportation agencies' and first responders' capabilities to clear traffic incidents. Also allows for improved integrated corridor management activities.
Emergency Preparedness	\$200M	Enhances the region's transportation agencies' emergency readiness, coordination and response capabilities, which are critical to the safety and protection of the region's transportation infrastructure and economic resiliency.
O&M for Arterial and Freeway ITS Infrastructure	\$2,100M	Maintenance of the existing and future arterial and freeway ITS equipment needed to achieve the full benefits of the FPI.
Traveler Information/ 511	\$260M	Collects, consolidates and distributes via data feeds/APIs accurate regional traffic, transit, and parking data for trip planning and real-time travel. Provides ridematch tool to reduce single-occupant vehicles and enables travelers to make more cost-effective and efficient travel-mode decisions.
TOTAL 28-Year FPI Need	\$5,810M	Creates a comprehensive, cost-effective means of managing the region's existing freeway and arterial infrastructure to keep people moving safely, efficiently, and effectively, with benefits across modes and through partnerships with the other regional and local transportation agencies.



For more information on the FPI, please contact by email:
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Freeway Performance Initiative Alignment with Plan Bay Area Goals:

Climate Protection

- Reduces emissions from all vehicles (ROG, NOx, CO PM2.5 and PM10)

Healthy & Safe Communities

- Reduces exposure to particulate emissions
- Reduces all types of collisions for ALL transportation modes
- Improves regional emergency preparedness and response efforts
- Increases safety on arterial streets for pedestrians and bicyclists

Equitable Access

- Empowers travelers to take advantage of lower-cost transportation options like transit and ridesharing

Economic Vitality

- Improves freight operations by reducing travel time, improving connectivity and accessibility, and boosting reliability on major truck corridors

Transportation System Effectiveness

- Improves operations and maintenance of the existing transportation infrastructure
- Improves total trip performance by addressing first/last mile commute concerns
- Reduces travel time and improves travel time reliability for ALL modes
- Increases the amount of information available to enable travelers to make more cost-effective and efficient travel-mode decisions
- Increases regional transportation connectivity through agency partnerships